

Mineral Industry Surveys

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MANUFACTURED ABRASIVES IN THE THIRD QUARTER 2014

The U.S. Geological Survey (USGS) collects quarterly data on manufactured abrasives through its survey of producers. Manufactured abrasives included in this report are fused aluminum oxide, silicon carbide, and metallic abrasives. Where indicated, data from Canada and the United States are combined to protect proprietary information. Except where noted, the quantities cited in this report are in metric units. All unit value calculations in this report are based on unrounded data.

Fused Aluminum Oxide

Combined production in Canada and the United States during the third quarter of 2014 was estimated to be 5,000 metric tons (t) of regular-grade crude fused aluminum oxide with an estimated value of \$800,000, which was essentially unchanged in quantity and value from that of both the third quarter of 2013 and second quarter of 2014. One company, operating one plant in Canada and one in the United States, produced fused aluminum oxide. These production figures have been rounded to the nearest 5,000 t to avoid disclosing proprietary data.

According to the U.S. Census Bureau, U.S. imports of crude fused aluminum oxide during the third quarter of 2014 were 40,000 t valued at \$26.3 million; imports from China were 37,000 t valued at \$23.8 million. The average price of imported crude fused aluminum oxide, excluding crude fused aluminum oxide from China, was \$828 per ton; the average price of crude fused aluminum oxide from China was \$643 per ton. About 93% of the imports came from China, 7% from Canada, and less than 1% from Germany. Imports of crude fused aluminum oxide from China may not all be abrasive-quality material.

U.S. imports of ground and refined fused aluminum oxide for the third quarter of 2014 were 15,800 t valued at \$21.0 million; imports from China were 3,240 t valued at \$2.99 million. The average price of imported ground and refined fused aluminum oxide, excluding ground and refined fused aluminum oxide from China, was \$1,440 per ton; the average price of ground and refined fused aluminum oxide from China

was \$924 per ton. About 21% of the imports came from China, 19% from Austria, 17% from Brazil, 16% from Germany, 9% from Canada, 6% from Hungary, and 12% from other countries.

U.S. exports of crude fused aluminum oxide for the third quarter of 2014 were 5,160 t. These exports were valued at \$18.6 million, or \$3,590 per ton. Canada received 48% of the exports that were shipped; Mexico, 16%; Germany, 9%; Japan, 5%; and other countries, 22%. U.S. exports of ground fused aluminum oxide for the third quarter of 2014 were 481,000 t valued at \$196 million, or \$407 per ton. Canada received 42% of the exports that were shipped; Norway, 19%; Egypt, 13%; Iceland, 12%; Russia, 6%; and other countries, 8%.

Silicon Carbide

Abrasive-grade silicon carbide is produced by one company in the United States. The total production of abrasive-grade silicon carbide during the third quarter of 2014 was estimated to be 10,000 t, with an estimated value of \$7.4 million, which was essentially unchanged in quantity and value from that of both the third quarter of 2013 and second quarter of 2014. These production figures have been rounded to the nearest 5,000 t to avoid disclosing proprietary data.

Total U.S. imports of crude silicon carbide during the third quarter of 2014 were 30,300 t valued at \$19.4 million; imports from China were 21,600 t valued at \$12.5 million. The average price of imported crude silicon carbide, excluding crude silicon carbide from China, was \$787 per ton; the average price of crude silicon carbide from China was \$581 per ton. U.S. imports of ground and refined silicon carbide for the same period were 9,490 t valued at \$14.4 million; imports from China were 6,180 t valued at \$6.11 million. The average price of imported ground and refined silicon carbide, excluding ground and refined silicon carbide from China, was \$2,520 per ton; the average price of ground and refined silicon carbide from China was \$988 per ton. During the third quarter of 2014, China accounted for 71% of the crude material and 65% of the ground and refined material imported.

U.S. exports of crude silicon carbide during the third quarter of 2014 were reported to be 3,070 t with a value of \$3.92 million. Third quarter exports of ground and refined silicon carbide were 1,060 t valued at \$5,750 million. About 98% of the crude material was shipped to, in decreasing order of quantity, Norway, Mexico, and Japan. About 97% of the refined material was shipped to, in decreasing order of quantity, Canada, Mexico, Japan, Germany, Spain, Italy, and China.

Metallic Abrasives

Metallic abrasives information was collected from 10 companies operating 11 U.S. plants. During the third quarter of 2014, five companies produced 47,000 t of steel shot and grit, a slight decrease compared with that of the same period in 2013. At least one of the companies produced shot and grit from reclaimed material. Total third quarter 2014 production was valued at \$20.2 million, or an average of \$429 per ton. Total production in 2013 was 189,000 t valued at \$81.2 million.

Shipments of steel shot and grit in the third quarter of 2014 were 43,600 t valued at \$21.8 million, or an average of \$500 per ton, compared with shipments during the third quarter of 2013, which were 43,700 t valued at \$21.9 million for an average of \$500 per ton.

During the third quarter of 2014, five companies produced 580 t of other types of metallic shot and grit (primarily cut wire shot) valued at \$1.93 million.

Imports of all types of metallic shot and grit during the third quarter of 2014 were 5,790 t valued at \$6.15 million for an average of \$1,060 per ton, compared with imports during the third quarter of 2013, which were 6,500 t valued at \$6.93 million for an average of \$1,070 per ton. Canada, Germany, China, the Republic of Korea, Japan, and Thailand were the leading suppliers, accounting for 42%, 14%, 13%, 11%, 10%, and 5% of the tonnage imported, respectively.

Exports of all types of metallic abrasives during the third quarter of 2014 were 11,700 t valued at \$16.5 million, or an average of \$1,410 per ton, compared with exports during the third quarter of 2013, which were 8,180 t valued at \$11.8 million, or an average of \$1,440 per ton. Shipments to Mexico accounted for 37% of the exports; an additional 27% was shipped to China, and 20% was shipped to Canada.

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 ${\it TABLE~1}$ PRODUCTION AND SHIPMENTS OF ALUMINUM OXIDE, SILICON CARBIDE, AND METALLIC ABRASIVES 1

	2013						2014						
	3d quarter		4th quarter		1st quarter-4th quarter		1st quarter		2d quarter		3d quarter		
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	
Source and product	(metric tons)) (thousands)	(metric tons	(thousands)	(metric tons)	(thousands)	(metric tons)	(thousands)	(metric tons)	(thousands)	(metric tons)	(thousands)	
United States and Canada, production: ^{e, 2}													
Crude aluminum oxide, regular-grade	5,000	\$800	5,000	\$800	10,000	\$1,700	5,000	\$800	5,000	\$800	5,000	\$800	
Silicon carbide ³	10,000	7,400	10,000	7,400	35,000	25,900	10,000	7,400	10,000	7,400	10,000	7,400	
United States, production:													
Steel shot and grit	47,200	20,300	47,200	20,300	189,000	81,200	47,000	20,200	47,000	20,200	47,000	20,200	
Other shot and grit ^{e, 4}	545	1,840	549	1,880	2,220	7,570	483	1,630	676	2,280	580	1,930	
Total	47,700	22,100	47,700	22,200	191,000	88,700	47,500	21,800	47,700	22,400	47,600	22,100	
United States, shipments:													
Steel shot and grit	43,700	21,900	43,700	21,800	175,000	87,400	43,500	21,700	43,600	21,800	43,600	21,800	
Other shot and grit ^{e, 4}	498	1,910	530	2,000	2,130	8,260	526	2,090	608	2,370	557	2,200	
Total	44,200	23,800	50,100	23,800	177,000	95,600	44,100	23,800	44,200	24,100	44,100	24,000	

^eEstimated.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Quantities are rounded to the nearest 5,000 tons to avoid disclosing proprietary data; values are estimated.

³Includes materials for metallurgical uses and other applications.

⁴Includes cut wire shot and reclaimed shot and grit from primary producers.

 ${\it TABLE~2}\\ {\it U.S.~EXPORTS~AND~IMPORTS~FOR~CONSUMPTION~OF~ALUMINUM~OXIDE,~SILICON~CARBIDE,~AND~METALLIC~ABRASIVES1

2013							2014						
3d quarter		4th qu	ıarter	1st quarter–4th quarter		1st quarter		2d quarter		3d quarter			
Quantity	Value ²	Quantity	Value ²	Quantity	Value ²	Quantity	Value ²	Quantity	Value ²	Quantity	Value ²		
(metric tons)	(thousands)	(metric tons)	(thousands)	(metric tons)	(thousands)	(metric tons)	(thousands)	(metric tons)	(thousands)	(metric tons)	(thousands)		
6,100	\$16,400	6,610	\$23,400	24,500	\$74,000	4,750	\$16,600	5,060	\$19,300	5,160	\$18,600		
622,000	236,000	565,000	231,000	2,170,000	870,000	597,000	249,000	466,000	213,000	481,000	196,000		
3,350	4,800	4,200	5,220	13,600	17,400	4,940	5,650	3,920	4,450	3,070	3,920		
970	4,300	997	4,300	4,760	17,700	1,480	4,660	1,420	4,670	1,060	5,750		
8,180	11,800	9,830	14,000	35,900	51,100	8,440	11,800	11,000	17,800	11,700	16,500		
31,300	20,800	33,700	23,300	121,000	80,100	18,600	12,800	36,400	24,600	40,000	26,300		
13,100	17,500	11,100	16,300	88,000	85,400	11,000	16,800	15,400	21,500	15,800	21,000		
30,400	16,200	19,600	12,100	90,200	57,500	27,800	16,400	20,800	14,800	30,300	19,400		
7,930	15,500	6,880	12,800	28,700	56,700	7,810	13,300	8,010	13,700	9,490	14,400		
6,500	6,930	5,880	6,010	23,900	24,700	6,100	6,130	5,890	6,000	5,790	6,150		
	Quantity (metric tons) 6,100 622,000 3,350 970 8,180 31,300 13,100 30,400 7,930	(metric tons) (thousands) 6,100 \$16,400 622,000 236,000 3,350 4,800 970 4,300 8,180 11,800 31,300 20,800 13,100 17,500 30,400 16,200 7,930 15,500	3d quarter 4th quantity Quantity (metric tons) Value² (thousands) Quantity (metric tons) 6,100 \$16,400 6,610 622,000 236,000 565,000 3,350 4,800 4,200 970 4,300 997 8,180 11,800 9,830 31,300 20,800 33,700 13,100 17,500 11,100 30,400 16,200 19,600 7,930 15,500 6,880	3d quarter 4th quarter Quantity (metric tons) Value² (thousands) Quantity (metric tons) Value² (thousands) 6,100 \$16,400 6,610 \$23,400 622,000 236,000 565,000 231,000 3,350 4,800 4,200 5,220 970 4,300 997 4,300 8,180 11,800 9,830 14,000 31,300 20,800 33,700 23,300 13,100 17,500 11,100 16,300 30,400 16,200 19,600 12,100 7,930 15,500 6,880 12,800	3d quarter 4th quarter 1st quarter-Quantity Value ² Quantity Quantity (metric tons) Value ² (thousands) Quantity (metric tons) 6,100 \$16,400 6,610 \$23,400 24,500 622,000 236,000 565,000 231,000 2,170,000 3,350 4,800 4,200 5,220 13,600 970 4,300 997 4,300 4,760 8,180 11,800 9,830 14,000 35,900 31,300 20,800 33,700 23,300 121,000 13,100 17,500 11,100 16,300 88,000 30,400 16,200 19,600 12,100 90,200 7,930 15,500 6,880 12,800 28,700	3d quarter 4th quarter 1st quarter—4th quarter Quantity (metric tons) Value² Quantity (thousands) Value² Quantity (metric tons) Value² 6,100 \$16,400 6,610 \$23,400 24,500 \$74,000 622,000 236,000 565,000 231,000 2,170,000 870,000 3,350 4,800 4,200 5,220 13,600 17,400 970 4,300 997 4,300 4,760 17,700 8,180 11,800 9,830 14,000 35,900 51,100 31,300 20,800 33,700 23,300 121,000 80,100 13,100 17,500 11,100 16,300 88,000 85,400 30,400 16,200 19,600 12,100 90,200 57,500 7,930 15,500 6,880 12,800 28,700 56,700	3d quarter 4th quarter 1st quarter—4th quarter Quantity Value ² Quantity Q	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	3d quarter 4th quarter 1st quarter—4th quarter 1st quarter 1st quarter 1st quarter 1st quarter 2d quantity Value² Quantity Quantity Value² Quantity Quantity	3d quarter Quantity (metric tons) Value² (thousands) Quantity (metric tons) Value² (metric tons) Quantity (thousands) Value² (quantity (metric tons)) Quantity (thousands) Value² (quantity (metric tons)) Quantity (thousands) Value² (quantity (metric tons)) Quantity (thousands) Value² (quantity (thousands)) Quantity (thousands) Quantity (thousands) Value² (quantity (thousands)) Quantity (thousands) Value² (quantity (thousands)) Quantity (thousands) Quantity (thousands) Quantity (thousands) Value² (thousands) Quantity (thousands) Quantity (thousands) Quantity (thousands) Value² (thousands) Quantity (thousan	St quarter Quantity Value ² Quantity Quantity Value ² Quantity Quantity Value ² Quantity Quantity Quantity Value ² Quantity Quantity Value ² Quantity Quantity Value ² Quantity Quantit		

¹Data are rounded to no more than three significant digits; may not add to totals shown.

Source: U.S. Census Bureau.

²Export values are free alongside ship values; import values are customs values.